Journal of Athletic Training 2001;36(3):316–321

www.journalofathletictraining.org

Principles of Liability for Athletic Trainers: Managing Sport-Related Concussion

Barbara Osborne

University of North Carolina at Chapel Hill, Chapel Hill, NC

Barbara Osborne, Esq, provided conception and design; analysis and interpretation of the data; and drafting, critical revision, and final approval of the article.

Address correspondence to Barbara Osborne, Esq, Exercise and Sport Science, University of North Carolina, CB 8605, Chapel Hill, NC 27599-8605. Address e-mail to b_osborne@unc.edu.

Objective: To provide an overview of the general legal principles of negligence for sports medicine professionals and apply these principles to situations involving athletes with head injury.

Data Sources: Case law dating back to 1976 and recent studies of sport-related concussion.

Summary: One of the most difficult problems facing athletic trainers and team physicians is the recognition and treatment of sport-related concussion. Providing medical clearance for sports participation and treatment of athletic injuries involves legal as well as medical issues. The threat of lawsuits exists for the sports medicine professional, whether the athlete is allowed to play or not. In general, established medical malpractice principles govern claims by athletes for injury or death caused by improper treatment by health care providers. The elements of negligence are examined, as well as the primary defenses an athletic trainer would use in court and risk management techniques to avoid litigation.

Conclusions/Recommendations: Athletic trainers may protect themselves from liability by including standardized cognitive or postural stability testing in preparticipation examinations, using objective tests rather than subjective judgement to evaluate athletes who have sport-related concussion, working closely with physicians, and keeping excellent records.

Key Words: negligence, duty, breach, causation, damage, reasonable person standard

One of the most difficult problems facing athletic trainers and team physicians is the recognition and treatment of sport-related concussion. Cerebral concussion involves a violent jarring or shaking of the brain caused by a sudden change in the momentum of the head. More than 300 000 sport-related traumatic brain or head injuries occur annually in the United States.[1] Moderate to high incidences of concussion have been reported in football, basketball, softball, soccer, baseball, boxing, rugby, and ice hockey.[1] Repeated head injury can result in permanent brain disability or death.[1]

Providing medical clearance for sports participation and treatment of athletic injuries involves legal as well as medical issues. The threat of lawsuits exists for the sports medicine professional whether the athlete is allowed to play or not. Athletic trainers and team physicians have been sued for prematurely clearing athletes, and surprisingly, have also been sued for not permitting athletes to play.[2–5]

Until recently, little was known about the medical consequences of head injury. This dearth of medical information has contributed to a lack of legal precedent, as only a few cases establish precedent when dealing with sport-related concussion. More cases dealing with negligence or medical malpractice involve a physician and an athlete; the medical condition generating the most media attention involves death as a result of a cardiac condition. The published cases involving severe head injuries are nearly all related to boxing, and most of those cases have been settled on issues unrelated to the actual diagnosis or treatment of the athlete.

In general, established medical malpractice principles govern claims by athletes for injury or death caused by improper treatment by health care providers.[6] In this paper, I provide an overview of the general legal principles of negligence for sports medicine professionals and apply these principles to situations involving athletes with head injury. Recommendations are made for athletic trainers and team physicians to protect themselves from liability.

NEGLIGENCE

In law, a tort is a private wrong or injury suffered by an individual as the result of another individual's conduct. The law provides injured individuals the right to be compensated through the recovery of damages. Torts may be intentional, meaning that the individual intended to act, or unintentional, in that the individual did not mentally intend to cause harm. Negligence is an unintentional tort.

Negligence law was founded on the principle that those who are harmed as the result of others' carelessness or failure to carry out responsibilities properly must be compensated. The person who was harmed has the burden of proving that the 4 legal elements of negligence are satisfied. The first element of negligence is to prove that there is a *duty* of care owed as a result of a relationship that exists between the parties. The second step is to prove that the defendant *breached* the duty owed to the injured party. Third, there must be proof that the breach of the duty is the *cause* of the harm to the plaintiff. Fourth, there must be *actual harm,* not just potential for harm to have occurred. All 4 elements of negligence must be proven in order for the plaintiff to be compensated by the defendant for damages.[7]

APPLICATION OF LEGAL PRINCIPLES TO ATHLETES WITH CONCUSSION

Duty

Although relatively few judicial opinions have concerned litigation between athletic trainers and competitive athletes, the courts have recognized that a duty exists between the parties.[7] The athletic trainer's responsibility, like that of the team physician, is to protect the health and safety of the athletes. In the case of an athletic trainer who is treating an athlete with a concussion, several legal duties exist as a result of the athletic trainer–athlete relationship. There are several possible recognized legal duties:

- Duty to properly assess the athlete's condition
- Duty to provide or obtain proper medical treatment
- Duty to provide clearance to participate
- Duty to inform the athlete of the risks of athletic participation given the particular medical condition

The case of *Pinson v State*[8] focused on the duty of the athletic trainer to a student-athlete. Michael Ray Pinson suffered a blow to the head during a collegiate football practice. He walked to the sidelines, said that he had been ''kicked in the head,'' and collapsed unconscious. The athletic trainer examined Pinson while he was unconscious and noted a palsy on the left side of Pinson's face, an absence of control of the left side of his body, unequal pupils, and an absence of response to pain, sound, or movement. He also noted that Pinson remained unconscious for 10 minutes. The athletic trainer instructed a student athletic trainer to accompany Pinson to the hospital but failed to give instructions to forward information that should be given to the attending physician regarding the athlete's initial condition. The athletic trainer never spoke with the physician regarding the symptoms that he observed on the field after Pinson collapsed. Pinson was admitted to the hospital for observation. A skull radiograph was obtained, and all neurologic checks were normal. The attending physician telephoned the athletic trainer with instructions that Pinson should not participate in football practice for a week and that if he had any further symptoms, he should return to the hospital. The athletic trainer picked Pinson up from the hospital on his release, at which time Pinson reported that he had a headache. The next day, he complained of headaches again, and the athletic trainer gave him Empirin 4 (Glaxo Wellcome, Research Triangle Park, NC), a buffered aspirin. Pinson continued to complain to the athletic trainer that he had headaches for the next several days. One week after Pinson returned from the hospital, the athletic trainer called the team physician and reported that Pinson was asymptomatic for a concussion. The team physician did not examine Pinson and, relying on the report of the athletic trainer that Pinson was asymptomatic, cleared him to return to practice. Pinson practiced, traveled, and played in at least 2 games over the next 3 weeks. He complained of headaches, dizziness, nausea, and blurred vision throughout this time period, but the athletic trainer did not report any of the symptoms to either the team physician or the original attending physician. Exactly 1 month after his initial head injury, Pinson collapsed on the sideline during football practice. He was taken to the hospital and underwent brain surgery for a chronic subdural hematoma of several hundred cubic centimeters, an acute subdural hematoma of approximately 25 to 30 cubic centimeters, and a midline shift of almost 1.5 centimeters. Pinson remained in a coma for several weeks and suffered severe and permanent neurologic damage. At the time of the trial, Pinson was hemiparetic and had no use of his left arm and little use of his left leg. He had a shunt to drain excess fluid from his brain, suffered from severe cognitive problems, and experienced frequent seizures. The trial was conducted before a Tennessee Claims Commissioner, who held that the athletic trainer had a duty to report Pinson's initial neurologic signs and subsequent headaches to a medical physician.[8]

Breach

Whether a legal duty has been breached is assessed from the athletic trainer's adherence to accepted sports medicine practice. Known as the ''reasonable person standard,'' an athletic trainer is expected to act as a reasonable athletic trainer would under the same or similar circumstance. The law recognizes that not all athletic trainers practice in the same settings, with equal access to resources, staff, facilities, or equipment, so the level of reasonable care changes according to the circumstances. Because an athletic trainer is a sports medicine professional, he or she would be held to the level of care that a reasonable sports medicine professional would be held to in the same situation.[9] This standard of care is usually established by expert testimony[9] based on national athletic training certification boards, standardized training programs, certification programs, and state licensing requirements. The certified athletic trainer must act with the skill and knowledge that is reasonable within the profession.

One of the difficulties of determining the legal standard of care for athletic trainers in dealing with athletes with concussion is the lack of a universally accepted standard for proper assessment and prescribed treatment of the injury. Several concussion grading scales[10–13] and return-to-play guidelines have been proposed in the literature; however, none has emerged as a ''gold standard.'' Most scales use concussive symptoms to grade the injury severity, which determines how long an athlete should be kept from returning to play. These concussive symptoms include memory loss, dizziness, headache, difficulty concentrating, amnesia, nausea, ringing in the ears, visual problems, aphasia, eye twitches, and dysequilibrium.

One of the primary criticisms of the grading scales is that the grading is often based solely on loss of consciousness and amnesia, when most concussions involve neither of these symptoms.[1] Another problem is that the scales rely heavily on anecdotal clinical evidence and limited scientific data. Symptoms are measured based on the athlete's input, and athletes often underreport symptoms because of a strong desire to return to play. Having said this, the proposed grading scales are considered very safe by most of the sports medicine community.

Although sports medicine researchers do not universally endorse any specific grading scale, the scales do provide legal guidelines for a reasonable standard of care to be used by athletic trainers. However, research indicates that most athletic trainers do not even use these guidelines when assessing athletes' head injuries.[1] From a legal perspective, it is important to note that the athletic trainer's actions are not being compared with what the average athletic trainer would do in the same or similar circumstance. What an average athletic trainer does is sometimes difficult to determine, may be unduly deferential to an older or outdated procedure, and is unlikely to produce optimal

sports medicine care.[3] Just because most athletic trainers evaluate athletes' head injuries on a hunch does not mean that it is legally reasonable to do so. A recent study[1] indicated that almost one third of football players who experienced concussion were held out of play for only 14 minutes, although the grading scales generally recommend that an athlete who has suffered a minor head injury remain on the sidelines for at least 20 minutes after the injury before an evaluation is made about return to play. It could be argued that, based on the scientific knowledge available, this behavior is certainly not reasonable. A jury may consider this behavior even less reasonable if evidence is presented that 14% of these athletes suffered a grade 2 concussion according to the Cantu scale.[14] Recommendations for treating a grade 2 concussion would require an athlete without symptoms to rest for at least 1 week, which is far longer than 14 minutes!

Generally, 3 serious conditions can occur after an athlete has suffered a head injury: subdural hematoma, second-impact syndrome, and chronic postconcussion syndrome. Subdural hematoma is the most common cause of death in athletes.[13] It can occur after even a mild head injury and may develop slowly over several days to a week. Second-impact syndrome is characterized by brain swelling and intracranial pressure that occur when an athlete sustains a second concussion while still symptomatic from an initial head injury. Although rare, this second injury almost always results in permanent brain injury or death. Athletes with chronic postconcussion syndrome may experience blurred vision, headaches, and lack of concentration and balance for months after the initial head injury. Because of the seriousness of these conditions, sports medicine researchers have sought more objective means to assess the athlete's condition after head injury and make reasonable decisions regarding when it is safe for that athlete to return to play.

Although the sports medicine community has not come to a consensus, 2 methods of objective testing may satisfy the reasonableness test: neuropsychological testing and postural stability testing. Neuropsychological testing measures the athlete's cognitive flexibility, attention span, orientation, concentration, visual-spatial capacity, distractibility, immediate memory recall, and problem-solving abilities.[15] These tests directly measure the cognitive qualities that are affected by head injury and allow athletic trainers to objectively evaluate the athlete's condition.[15] Although administration of these tests has generally occurred in a clinical setting, recent research indicates that athletic trainers can also administer neuropsychological tests on the sidelines and achieve valid results.[16,17] The National Football League and National Hockey League currently use neuropsychological testing to assess professional athletes' cognitive abilities, establishing that it is reasonable to employ these tests as a standard for assessing, treating, and making return-to-play decisions.

Similarly, researchers have established that postural stability tests are reasonable to use in determining when symptoms of concussion cease.[18,19] These objective tests use sophisticated forceplate systems to challenge sensory systems involved in balance by altering visual and support surface conditions.[18] Although it may not be reasonable to expect the average athletic trainer to have access to this type of equipment, research indicates that there is a significant correlation between the results of simple tests that the athletic trainer can conduct on the sideline and the results of sophisticated postural stability tests.[19] The Balance Error Scoring System[19] is another user-friendly, cost-effective objective testing method. Athletic trainers can objectively measure the athlete's performance on the single-leg, double-leg, and tandem stances on firm and foam surfaces on the sidelines without needing computerized equipment to determine if there are any lasting effects of the head injury. The reasonableness standard related to breach of duty is measured ''under the same or similar circumstances.''[9] Because athletic trainers must make field decisions about whether the athlete should be allowed to play after experiencing a head injury, a jury could find that it is reasonable to expect an athletic trainer to perform simple sideline tests as a standard for assessing the athlete, treating the athlete, and making those decisions.

Perhaps one of the reasons that athletic trainers have relied so heavily on subjective measures and personal intuition in evaluating an athlete with a head injury is that they have nothing for comparison. Athletic trainers and team physicians routinely conduct preparticipation examinations to determine if an athlete has a condition that would preclude participation in sports. Although reported legal decisions provide little guidance regarding the appropriate nature and scope of a standard preparticipation examination, many of the filed lawsuits allege that the sports medicine professional did not discover a medical condition that later resulted in injury or death.[3] Case law indicates that physicians who conduct a thorough preparticipation examination in conformity with accepted standards of practice are not found to be liable for the athlete's injuries that occurred postexamination.[20,21] It is foreseeable that athletes who compete in contact sports may experience head injury; therefore, including neuropsychological and postural stability testing in preparticipation examinations seems reasonable. These tests provide athletic trainers with objective baseline data, providing a basis for comparison of cognitive function while also taking into account the individual differences of each athlete. In *Speed v State*,[22] a physician was found negligent in failing to order appropriate tests necessary to diagnose the nature of an athlete's condition. Similarly, an athletic trainer or team physician who fails to use prescribed subjective tests to assess the severity of head injury may also be negligent.

Deciding when an athlete who has suffered a concussion can safely return to play is one of the greatest challenges facing athletic trainers and team physicians. Sports medicine professionals must consider the intensity and physical demands of the athlete's sport, all objective clinical evidence, and the probability and severity of harm from athletic participation given the athlete's condition. Although the court decided the case of *Classen v Izquierdo*[23] on other grounds, the opinion indicated that a physician has a duty to conform to good and accepted standards of medical care in determining whether an athlete should continue participating in a sport. In this case, a ringside physician refused to stop a boxing match in which a participant received several blows to the head. The boxer ultimately died from the multiple head injuries he sustained, and the court indicated in the opinion that the failure of the physician to keep the athlete from competing may have constituted malpractice. In the case of an athlete with a head injury, there is uncertain potential for permanent disability or death. Given the extreme risks, it seems reasonable to err on the side of caution.[24]

When the decision has been made to let the athlete return to play after head injury, the athletic trainer or team physician has a duty to fully disclose information about the athlete's

medical condition to the athlete.[6] Failure to provide an athlete with full disclosure of material information about playing a sport with a medical condition or the potential consequences creates liability for negligence.[25] This duty to disclose relevant information relates to the issue of informed consent.

Informed consent is technically a defense for the intentional torts of assault and battery, but modern courts have translated this concept into negligence terminology.[26] As a legal principle, informed consent comes from the public policy that a competent adult has the legal right to determine what to do with his or her body. As such, adults may provide consent, but minors require consent by a parent or guardian.[27] To satisfy legal requirements, consent must represent an informed decision regarding the risks of treatment and participation. For an athlete's decision to be informed, the sports medicine professional must clearly warn of all material, short-term, and long-term medical risks of continued athletic participation under the circumstances. Material information is defined in *Canterbury v Spence*[25]: ''a risk is thus material when a reasonable person, in what the physician knows or should know to be the patient's position, would be likely to attach significance to the risk or cluster of risks in deciding whether or not to forego the proposed therapy.'' The athletic trainer must explain all of the potential risks in plain and simple language that the athlete can comprehend.[28] Unless the medical risks are fully explained, the athlete has a claim against the athletic trainer if he or she can prove that he or she would not have played if informed of the material risks of doing so.[29]

Causation

In a legal case of negligence, the athlete must prove by a preponderance of the evidence that the breach was in fact the legal cause of the injury.[30] Actual cause is established if the athlete can prove that the athletic trainer's actions were a considerable determining factor in the damage claimed. When treating an athlete with a concussion, actual cause can be an act, such as the act of clearing an athlete to participate, or an omission of an act, such as a failure to conduct reasonable objective tests to assess the athlete's condition. If the athlete cannot prove actual cause, he or she must prove proximate cause. Proximate cause occurs when the action of the athletic trainer foreseeably leads to harm or injury to the athlete. Athletic trainers and team physicians can share liability if more than 1 person, other than the athlete, contributed to the injury.[7]

Pinson v State[8] also addressed the issue of causation. The athletic trainer argued that his failure to report Pinson's headaches and other symptoms to the team physician was not the cause of Pinson's injuries. In this case, the court determined that the failure to report this information was a substantial factor in bringing about the permanent damage Pinson suffered because it was foreseeable that Pinson's first injury would have been properly diagnosed and treated if the athletic trainer had reported the symptoms. Additionally, had the athletic trainer reported Pinson's headaches and other symptoms to a physician after his release from the hospital, additional tests such as a neurologic consultation and a computed tomography scan would have been ordered. The court concluded that but for the athletic trainer's failure to do his duty, Pinson would likely have had little or no permanent neurologic deficit.

Damage

The fourth element of negligence is damage, and the athlete has the burden of proving that actual damage exists. In a negligence action, the injured party typically seeks damages in any or all of the following areas: past, present, and future pain and suffering; past, present, and future medical expenses; and past, present, and future diminution of earning capacity.[31] In *Pinson v State*,[8] the court awarded Pinson $1.5 million dollars in damages, including $450 000 from the athletic trainer.

DEFENSES AGAINST NEGLIGENCE AND RISK MANAGEMENT

Working in an environment in which both the medical standards and legal requirements are uncertain, the athletic trainer or team physician should understand the potential defenses against negligence claims. The most complete defense is to prove that 1 of the 4 elements of negligence is not proven by a preponderance of the evidence. In *Pinson v State*,[8] the athletic trainer attempted unsuccessfully to prove that 3 of the elements were not present: (1) that he did not owe a duty to disclose information to the physician, (2) that he did not breach his duty because he acted as a reasonable athletic trainer under the circumstances, and (3) that his actions (omission) did not cause Pinson's injuries.

Another defense commonly used in athlete injury cases is the assumption of risk doctrine. An athlete can legally assume the risk of harm by opting to play with a known medical condition or injury, thereby removing the liability of the athletic trainer. Assumption of risk is based on the legal principle that no harm is done to one who consents. Because this is a defense, the athletic trainer has the burden to prove the following points:

- The athlete knew of the risk (or that a reasonable athlete should have known)
- The athlete agreed to accept the risk either expressly (orally or in writing) or by implied consent (participating)

Competitive athletes are often willing to assume health risks to engage in sport. For legal purposes, a competitive athlete is defined as one who participates in an organized team or individual sport that requires regular competition against others as a central component, places a high premium on excellence and achievement, and requires vigorous training in a systematic fashion.[3] Competitive athletes may exist at the youth, interscholastic, intercollegiate, and professional or master's levels of sports. These athletes accept some risk of injury just by engaging in competitive sports. When bodies collide, it is foreseeable that muscles may be bruised, connective tissue may be strained or torn, bones may be broken, and catastrophic injury or death may even occur. Athletes may be internally compelled to play by their love of the game, a need for affiliation, or the pursuit of excellence or prestige. They may want to play because of external forces such as peer pressure, living up to the expectations of coaches or parents, or potential economic gain. Whatever the reasons, athletes are often willing to play regardless of the health consequences.

The athletic trainer or team physician cannot abdicate his or her duty because the athlete wants to play. The duty of the sports medicine professional is to always protect the health and safety of the athlete. The athletic trainer must make participation decisions based on the best objective data available. Tremendous pressure may be placed on the athletic trainer to return the athlete to play as soon as possible by the coaching staff, administrators, other team members, alumnae and fans,

Common Sense Risk Management Techniques

Build relationships
: A little goes a long way; athletes and their parents are much less likely to sue an athletic trainer who they think truly cares about them.

Obtain a written contract
: Insist on a written contract that includes a detailed job description. This provides documentation as to the scope of the athletic trainer's employment.

Obtain a preparticipation examination
: Neuropsychological or postural stability testing (or both) are recommended to establish a basis for comparison should head injury occur.

Obtain informed consent
: Informed consent is a contract in which the participant acknowledges acceptance of the risks of engaging in the activity in exchange for the opportunity to participate. Written documentation reduces the chance of litigation. Note that informed consent contracts provide minimal protection against suits by those participants under 18 years of age, as parents may not sign away the rights of a minor, and minors may not legally enter into contracts. Obtain approval by legal counsel for proper language and structure.

Keep records
: An accurate paper trail provides documentation that the athletic trainer satisfies the ''reasonable person'' standard. Medical records should report only facts and not the sports medicine professional's opinions. These documents are always admissible as evidence in a trial, whereas opinions are not necessarily admissible. However, if the opinion is included in the medical record, then the opinion is admitted. Remember to maintain the confidentiality of the athlete's medical record.

Participate in continuing education
: This risk management policy is tied to the standard of care (ie, what a reasonable athletic trainer knew or should have known). The field of sports medicine is continually evolving, and athletic trainers or team physicians cannot rely on the fact that something has ''always'' been done a certain way.

and even the athlete. The athletic trainer cannot be influenced by the team's need for the player or even by the athlete's desire to play. Even if the athlete begs to be allowed to play, the athlete does not assume the risk of the athletic trainer's negligence.[30]

Another legal caveat is that the athlete must know and appreciate the specific risk of harm of participating. It is very important to note that an athlete with a head injury may be physically unable to appreciate the health risks of playing after a head injury. Does an athlete with a brain injury have the legal capacity to make this type of decision? To preserve this defense as an option, the athletic trainer could carefully assess the athlete's cognitive function to determine whether the athlete has the capacity to understand the risks. Athletic trainers and team physicians should always inform participants either orally or, preferably, in writing of the risks involved in the activity. For special events or one-time activities, the sports medicine professional may create a contract that fully describes the risks in plain and simple language. Words in the contract expressly state that by signing the document, the participant acknowledges the risks and accepts them.

Another defense related to assumption of risk is the doctrine of contributory negligence. If the athlete in any way contributed to his or her own harm, the sports medicine profession is not liable. As a defense, the athletic trainer or team physician bears the burden of proving that the plaintiff was in some way responsible for the injuries incurred. An athlete may be contributorily negligent if he or she voluntarily takes part in a sport and the decision to participate is unreasonable, or if the athlete deliberately disregards a warning or instruction not to participate. In *Jarreau v Orleans Parish School Board*,[28] a high school football player was found contributorily negligent for continuing to play while injured. The athlete may also be found to have contributed to his or her own harm by lying about a condition to the sports medicine professional. Contributory negligence is a complete defense, so the sports medicine professional who can prove that the athlete contributed to his or her harm in any way, no matter how small, is not liable for any damages.

As a public policy, it seems unfair that a professional who is negligent is freed from the obligation of paying damages because the plaintiff in some way contributed to the injury. Many states no longer allow assumption of risk or contributory negligence as a complete defense but mitigate damages by comparative negligence principles. Comparative negligence recognizes that damages should be paid by the one who caused the harm, but damages are decreased in proportion to the degree of damage contributed by the athlete. Instead of the plaintiff's receiving nothing because he or she contributed in part to the injury, the athlete recovers a lesser amount.

Many of the decisions in medical malpractice cases that were in favor of the sports medicine professional were not decided on the merits of whether the athletic trainer or team physician acted prudently but rather because the claim was dismissed based on the doctrine of governmental immunity.[10,20,32] In *Lennon v Peterson*,[32] a complaint against the athletic trainer at a public university was dismissed. Governmental immunity is granted to the state, preventing legal action for damages against the government and its political subdivisions. Public educational institutions are covered, but private institutions are not. Governmental immunity is not a total defense in most states but generally caps the amount that the government would be required to pay if a state actor is negligent. Governmental immunity statutes generally protect state employees who act within the scope of their employment but will not protect against acts of gross negligence, recklessness, or intentional torts. The case of *Gardner v Holifield*[10] was dismissed because the physician was the director of a public university's student health center and was acting within the scope of his employment under the state immunity statute.

Risk management procedures will not help sports medicine professionals defend themselves in a lawsuit but should help prevent litigious situations from occurring.

To develop a comprehensive risk management program, sports medicine professionals must take several actions:

- Identify the risks present in the program
- Estimate the extent of the risks, taking into consideration the seriousness of the injuries that may occur and the likelihood that the injury will occur
- Evaluate the options that could be taken to reduce risk
- Implement the risk reduction policies and procedures

As risk management procedures are established, it is important that whatever is done is measured against the standard of care that a reasonably prudent professional would give in the same or similar circumstance. Suggestions for risk management techniques are included in the Table.

CONCLUSIONS

Many sports medicine issues relating to head injury are medically and legally unresolved. Adherence to outdated sports medicine guidelines should not be a recognized defense. Standards should be updated and modified periodically as the practice of sports medicine evolves to promote the health and safety of athletes. Giving legal effect only to guidelines consistent with the medical state of the art provides an incentive to medical organizations to revise the guidelines to stay current with advances in sports medicine research.

It is imperative for sports medicine researchers to establish an evidence-based medical guideline for making return-to-play decisions for athletes after concussion. This standard would inform athletic trainers and other sports medicine professionals as to what the law expects of them and would prevent retrospective second guessing by lay jurors as to whether the practitioner's conduct was reasonable. Until a legal standard of care is established, athletic trainers and team physicians must work together to safeguard the athlete's health after head injury by relying on objective testing as well as subjective measures to evaluate athletes in return-to-play situations.

REFERENCES

1. Guskiewicz KM, Weaver NL, Padua DA, Garrett WE Jr. Epidemiology of concussion in collegiate and high school football players. *Am J Sports Med.* 2000;28:643–650.
2. *Kampmeier v Nyquist,* 553 F.2d 296 (2d Circ. 1977).
3. *Grube v Bethlehem Area School District,* 550 F. Supp. 418 (E.D. Pa. 1982).
4. *Wright v Columbia University,* 520 F. Supp. 789 (E.D. Pa. 1981).
5. *Poole v South Plainfield Board of Education,* 490 F. supp. 948 (D.N.J. 1980).
6. Mitten MJ. Team physicians and competitive athletes: allocating legal responsibility for athletic injuries. *U Pitt Law Rev.* 1993;55:129.
7. Dobbs DB. *Torts and Compensation.* St. Paul, MN: West Publishing Co; 1993.
8. *Pinson v State,* 1995 Tenn. App. LEXIS 807.
9. Wong GM. *Essentials of Amateur Sports Law.* Westport, CT: Greenwood Publishing Group; 1994.
10. *Gardner v Holifield,* 639 So. 2d 656 (Fla. App. D.1 1994).
11. *Mikkelsen v Haslam,* 764 P. 2d 1384 (Utah App. 1988).
12. Kelly, JP, Rosenberg JH. Diagnosis and management of concussion in sports. *Neurology.* 1997;48:575–580.
13. Practice parameter: the management of concussion in sports (summary statement). Report of the Quality Standards Subcommittee. *Neurology.* 1997:48:581–585.
14. Cantu RC. Guidelines for return to contact sports after a cerebral concussion. *Physician Sportsmed.* 1986;14(10):75–83.
15. Collins MW, Grindel SH, Lovell MR, et al. Relationship between concussion and neuropsychological performance in college football players. *JAMA.* 1999;282:958–963.
16. Oliaro SM, Guskiewicz KM, Prentice WE. Establishment of normative data on cognitive tests for comparison with athletes sustaining mild head injury. *J Athl Train.* 1998;33:36–40.
17. Onate JA, Guskiewicz KM, Riemann BL, Prentice WE. A comparison of sideline versus clinical cognitive test performance in collegiate athletes. *J Athl Train.* 2000;35:155–160.
18. Guskiewicz, KM, Perrin DH, Gansneder BM. The effects of mild head injury on postural stability in athletes. *J Athl Train.* 1996;31:300–306.
19. Riemann BL, Guskiewicz KM. Effects of mild head injury on postural stability as measured through clinical balance testing. *J Athl Train.* 2000; 35:19–25.
20. *Rosenweig v State,* 158 NE 2d 229 (1958).
21. *Classen v State,* 131 Misc. 2d 346 (1985).
22. *Speed v State,* 240 NW 2d 901 (1976).
23. *Classen v Izquierdo,* 137 Misc. 2d 489 (1987).
24. *Knapp v Northwestern University,* 101 F. 3d 483 (1996 U.S. App.)
25. *Canterbury v Spence,* 464 F. 2d 772 (DC Cir. 1972).
26. Yasser R, McCurdy JR, Goplerud CP, Weston MA. *Sports Laws: Cases and Materials.* 4th ed. Cincinnati, OH: Anderson Publishing; 2000.
27. Dobbs DB, Keeton RE, Owen DC. *Prosser and Keeton on Torts.* 5th ed. St Paul, MN: West Publishing Co; 1984:187.
28. *Jarreau v Orleans Parish School Board,* 600 So. 2d 1389 (La. App. 4th Cir. 1992).
29. *Sherwin v Indianapolis Colts, Inc.,* 752 F. Supp. 1172 (N.D.N.Y. 1990).
30. Weistart JC, Lowell CM. *The Law of Sports.* Indianapolis, IN: Bobbs-Merrill Co; 1979:970.
31. Berry RC, Wong GM. *Law and Business of the Sports Industries. Common Issues in Amateur and Professional Sports.* 2nd ed. Westport, CT: Praeger Publishers; 1993:410.
32. *Lennon v Peterson,* 624 So. 2d 171 (Ala. 1993).